Biological Effects from Nonpoint Source Pollution in an Agricultural and Urban Stream Located in the Lower Fraser River Valley

M. Sekela, S. Sylvestre, M. Fluegel, G. Moyle *and* ***T. Tuominen***
Environment Canada

Oncorhynchus clarki (cutthroat trout) and *Pacifastacus leniusculus* (signal crayfish) were used as bioindicators to study the effects of agricultural and urban runoff in two streams located in the Lower Fraser River Valley, British Columbia, Canada. Three sampling sites were located in the Elk Creek watershed: a reference site located upstream of anthropogenic sources of pollution and two sites located downstream of agricultural influences. A single sampling site was located in the Yorkson Creek watershed downstream of urban influences. Streamside flow-through aquariums were used to expose hatchery-raised cutthroat trout and crayfish to stream water for approximately 60 days. Sampling was conducted in the fall of 1999, 2000 and 2001 as well as in the spring of 2000. Results indicate that when compared to the Elk Creek reference site the cutthroat trout and crayfish exposed to stream water downstream of agricultural and urban influences had elevated stress indicators including mixed function oxygenase (MFO) induction. Reduced swimming performance was also observed in the cutthroat trout at the downstream sites.